Missouri Office of Health Information Technology (MO-HITECH)
Request for Information

March 25, 2010

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Table of Contents

Goals and Objectives

Missouri's broad objectives are to:

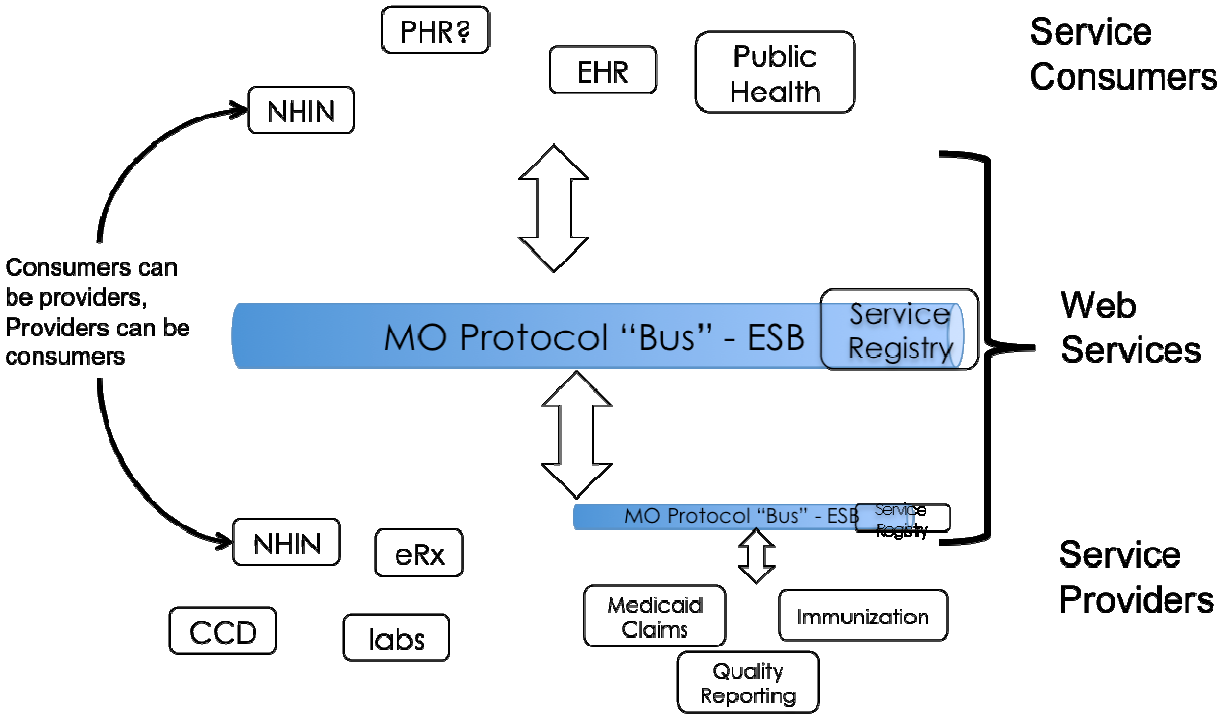
- Support providers' ability to satisfy Meaningful Use criteria (step wise through all phases)
- Lay the basis for robust clinical exchange of information between all stakeholders in Missouri to improve patient care
- Ensure the capability to enable connectivity with an Nationwide Health Information Network (NHIN) gateway or NHIN Direct

The goal for this effort is to obtain information regarding component functions and general pricing ranges, so that we may consider various models based on our desired functionality and our available budget. To place this in context, the current request for information (RFI) is an initial step in Missouri's planning process and may be followed by a request for proposal (RFP) for contracting with a partner to build a statewide HIE platform; the current RFI is independent of any future RFP and will not obligate or affect a respondent's ability to respond to nor impact the evaluation of their response to a future RFP. This RFI is intended to obtain market information on functional capability and general component pricing; information obtained through the process will be shared with the Missouri Office of Health Information Technology (MO-HITECH) collaborative stakeholder process as it works toward a final agreement on functionality while taking into account MO-HITECH's strategic goals, operational plan and available resources.

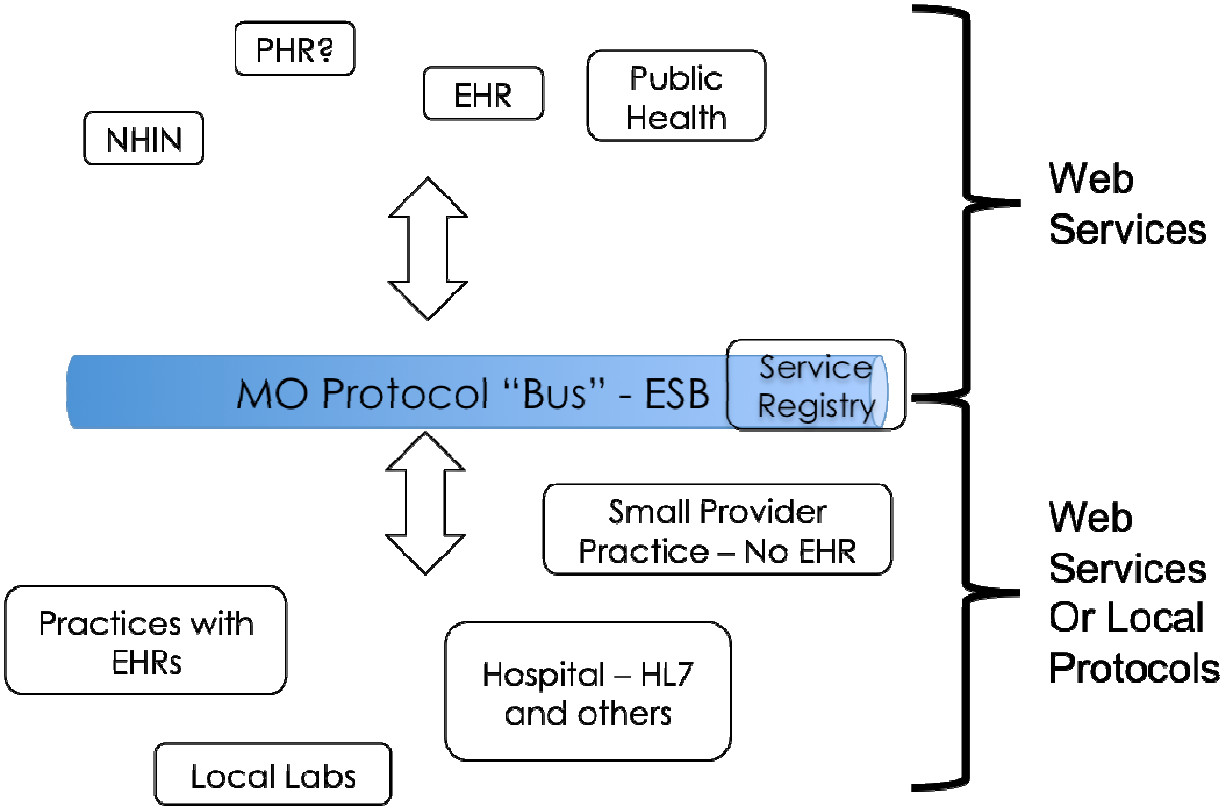
It is hoped the proposed architectural approach will be familiar to respondents. The intent is to build the network using service oriented architecture (SOA) principles, and to describe the desired clinical service capabilities in terms of web service components to the extent possible. The respondents should indicate both the components they can supply and generally how they would price these components.

The proposed network architecture is composed of hubs that communicate using the NHIN messaging platform and other market accepted health information exchange protocols as they become available. The plan is to build a Statewide Health Information Organization (HIO) that will serve as the nexus of these hubs, capable of routing messages among all providers and also to consumers, and orchestrating messages according to business rules needed to deliver meaningful use functions. The Statewide HIO will also facilitate connectivity to the Statewide HIO for providers unaffiliated with an HIO or hub and subsequently lacking an "onramp" to the statewide network, in support of a fundamental MO-HITECH principle: "No Provider Left Behind." Therefore, the request is for pricing around these two types of connectivity for the Statewide HIO:

1. Connecting hubs using uniform, standard protocols from the NHIN or other widely accepted messaging platform(s). In the diagram below this means implementing the "MO Protocol Bus" and providing the service registry for statewide HIE services. Other hubs would query the registry to find endpoint services when making requests, and could also be service providers with entries in the registry. Note that the State Government is constructing an ESB to expose State Services. An important function of the Statewide HIO implementation will involve working closing with the State government to connect this ESB to the statewide network. Translation of formats and other meditation of service requests is also under consideration.



2. Connecting providers directly to the Statewide HIO. This is the function that current implementations of HIE often provide as depicted in the figure below: connecting various systems from providers and other resources and bridging to a standard web services interface to integrate into the larger statewide and national health information network.



Below is a brief description of clinical service requirements followed by assertions of required underlying functionality. Respondents should address whether they can provide the asserted functionality or offer alternatives. Respondents may also offer alternative models for the clinical service capabilities. Please note that these services are intended to serve as a foundation for future/additional health information exchange (HIE) services including: quality reporting, public health reporting, clinical decision support, clinical surveillance, and patient self-management. As part of the RFI response, please indicate how your approach satisfies the clinical service requirements, while also laying the foundation for future HIE services.

A respondent is expected to describe a single, complete solution; please indicate if your response requires collaboration with or inclusion of additional partner(s), as well as if you currently have formal relationships with contemplated partner(s). We encourage potential respondents with component solutions to respond in partnerships that offer a complete solution.

Clinical Functional Service Requirements

The clinical functional service requirements are:

Laboratory Ordering and Results Delivery

Push and pull lab orders and results to Missouri providers for integration into EHRs. The respondent must integrate with labs, lab hubs, or other sources of leveraged laboratory connections, receive digital laboratory results (PDF versions are not acceptable) and route those results to provider systems; laboratory ordering capabilities are also desirable.

1. Integration with labs via HL7 2.5 or similar interface (such as via HITSP or NHIN constructs).

2. LOINC coding/translation of results if necessary.

3. Bi-directional interface to reference labs.

Electronic Prescribing (e-prescribing)

Provide connectivity to multiple sources of medication history, formulary, and eligibility, and respond to queries from providers for such information. Provide a statewide interface for e-prescribing transactions for providers with EHRs.

1. Connect to Surescripts and application e-prescribing networks

2. Connect to Missouri State enterprise service bus (ESB) for medication history from government systems.

3. Provide connectivity and query response capabilities to provider EHRs based on NHIN messaging platform or other broadly accepted standard protocols. Optionally provide ESB mediation to enable connectivity using NCPDP or SOAP.

4. Service to enable new connections to new sources of medication history that arise, such as hospitals, outpatient surgical centers, and outpatient treatment facilities.

5. Bidirectional interface to personal health records (PHRs) (e.g. Google Health, Microsoft HealthVault). It is desirable to obtain specific patient medication history for medications personally obtained including those classified by the Food and Drug Administration as food and herbals.

Clinical Information Exchange

Enable members of the Statewide HIO to exchange key clinical information between their EHR systems.

1. Accept and route CCD and/or CCR payloads between any providers connected.

2. Optionally provide ESB mediation to enable translation or aggregation between proprietary formats and CCD or CCR formats.

3. Endpoint system interoperability (e.g. delivery to EHRs, PHRs, or other systems).

Eligibility and Authorization Unification

Provide a single point of connectivity to all payors in Missouri via multi-payor portal or other means to enable day certain eligibility transactions (including authorization) from a provider to any payors within their practice area.

1. Connect to all payers in Missouri and enable conducting eligibility transactions by 270/271 transactions or equivalent allowing day certain eligibility determinations.

2. Route eligibility requests from provider EHRs and/or practice management systems to appropriate payers and return results to provider EHRs and/or practice management systems, accounting, and/or billing subprograms.

Web Viewers for Providers Without EHRs

Provide EHR alternative viewing capability for all clinical services; this should require only standard web browsers. Close to full EHR functionality is desirable, but the critical requirement is to enable providers without EHRs full access to clinical service functions.

Value-Added Services (optional)

While this RFI is focused on the immediate needs and initial clinical services, the vision for transforming Missouri healthcare is based on moving toward patient centered models involving robust coordination of care. Further, there is broad interest in certain specific capabilities and we are requesting you to describe your ability to provide them:

- **Radiological image exchange**, including management of storage and caching of images, DICOM support and ability to provide “viewers” for clinician display. If you have worked with or have partnerships with PACS please include a brief description.

- **Population-based health management and reporting**, including psuedonimization, support for “data marts” and reporting and display capabilities.

- **End user integration experience**. The architecture is vendor agnostic and intended to integrate with multiple systems for display of clinical information. Please describe your experience with end user systems including EHR’s and your own end user functionality if applicable.

- **Integration with provider workflow**. Please describe any significant capabilities, experience or partnerships enabling clinical workflow integration, including messaging, rules and alerts.

Beyond these specific items, please describe – briefly - your experience with; patient centered medical homes; clinical decision support; gaps in therapy; deviation from best practices; predictive analysis; integration with home monitoring (including but not limited to device integration); and other capabilities supporting advanced clinical care models.

Core HIE Service Requirements

The core HIE service requirements are:

Patient Registry

The proposed design calls for a federated patient registry, linking together registries from the various hubs on the network and also providing the capacity to serve as a hub registry for providers unaffiliated with another hub. Functionally, this is often referred to as an MPI/RLS, enabling matching and location of patient information anywhere in the network.

Provider Registry

The proposed design calls for a federated provider registry, linking together provider registries from the various hubs on the network and providing the capacity for one where one is needed. Similar to a patient registry service, search, create, update, and archive functions are to be supported.

Organization Registry

The proposed design calls for a federated organization registry, linking together organizational registries from the various hubs on the network. The provider registry and the organization registry must be cross-linked so that affiliations between providers and organizations are represented. The organization registry should also be able to provide a unique identifier capturing the organizational information including any systems and system meta-data that are used to connect to the network.

Consent Registry

Based on the access consent policy that Missouri utilizes, patient consent policies need to be linked and accessible in order to operate in an NHIN exchange model. These consent policies should provide a consistent source of a consumer's preferences, thereby enabling patient engagement and provider access to clinical information. The registry should be able to connect to existing consent registries and provide a consent registry if one is not available.

Web Services Registry (UDDI)

The Statewide HIO provides the registry containing endpoints for statewide Web services, stored in an NHIN compatible registry. The registry is able to point to other HIO registries or serve as the main lookup vehicle for any endpoints and nodes across the network.

Web Services Endpoints and Messaging (Service Bus)

The Statewide HIO must implement Web Services, enabling service consumers to connect to endpoints in the Services Registry, and also manage administration such as registering service providers and service consumers. Additionally, the service bus should be able to reliably store, forward, aggregate, and pull from any service endpoints that are dynamically available or contained within the services registry.

Integration and Message Transformation

The Statewide HIO should provide orchestration/integration to enable simpler, integrated responses to complex requests from service consumers. Message transformation in and out of various formats should also be provided, for example from X12 EDI formats to Web services/SOAP formats. As other communication or object access models arise (such as REST-ful web services), the Statewide HIO should also be able to connect and utilize any emerging health exchange standards or protocols.

Integrated Healthcare Enterprise (IHE) Profile Support (PIX Manager, XDS Registry, XDS Repository, etc.)

Support for the NHIN messaging platform generally requires support for various IHE profiles, specifically the use of PIX/PDQ for patient identification and the use of XDS profiles for document indexing and retrieval; in addition, please describe the use of cross community profiles including XC.

Role Based Access and Management

Required for security and authorization as described in the NHIN messaging platform and may require additional specificity to meet Missouri or Statewide HIO privacy and security policies. The intersection of user roles as defined by the user directory and trust models in the proposed solution should be provided.

Terminology Management (HITSP C83 / C80 Support)

This is also required to enable uniform transport of the CCDs. As many existing interfaces are not compliant with the terminology standards described in the existing HITSP specifications, your solutions should clearly describe how it would handle the challenge of semantic interoperability between systems.

Message and Data Validation

The Statewide HIO should be able to examine messages for both structural and format validation. Additionally, it should support notification and any data correction processes that may be necessary for the HIE functions the solution supports. For example, claims transactions have specific requirements based on the receiving system.

System Administration

Standard administration services such as user provisioning, security and access control, Services Registry administration, etc. Additionally, system administration should provide tools to address reliability, availability and serviceability factors including upgrade paths, scaling, backwards compatibility and associated functions based on the specific HIE functions.

System Configuration

Standard configuration tasks such as installation, server setup, synchronization for redundancy, and system configurations should be clearly addressed in the response. Please be clear which components can be configured and how the configuration is performed (e.g. configuration file, user interface, and programmatically). Describe the production and performance impact when the system is reconfigured.

Privacy

The system should support the privacy of protected health information according to HIPAA, relevant state laws and applicable policies. Describe how your system protects enables and enforces patient privacy. Describe both the controls your solution provides and any procedures you would recommend to protect patient protected health information.

Security

Describe your solution's support for the "Four A's": authentication, authorization, access, audit. Please describe how your solution supports messaging, system, and network security protocols. Also, please describe how your system supports immutability of audit entries as it relates to access and disclosure of patient health information (PHI). Include a description of how your system supports and/or provides two-factor authentication.

Logging

Describe the levels and your solution's logging of transactions and transaction types including but not limited to:

- NHIN / HHS standards
- IHE auditable events
- Debugging or event tracing

Monitoring

Describe your solution's support for internal system monitoring, load balancing and network monitoring of services availability. Additionally, describe any operational, business-driven, reliability, availability and serviceability monitoring that is provided. Describe any specialized rules or methods that your solution provides to detect unusual clinical, access, or other HIE functional events based on the clinical services. Examples include specialized rules your system utilizes to detect clinical gaps in care, drug seeking or shopping behavior, or other surveillance type functions based on the transactions traversing the network.

Reporting

Describe your solution's support for operational, audit trail, and management reports, including but not limited to:

- Access metrics
- Usage metrics
- Consent adherence
- Transactions
- Ad hoc reporting

Describe the parameters that your solution supports for reporting generation and customization.

Disclaimers

- The pricing information provided in the current information request will inform the ongoing development of MO-HITECH's technical approach and project scope, including feasibility in terms of participants, number of providers, scope of development, and HIE services to be implemented.

- Requirements for full scale statewide deployment of health information exchange and services are not currently available.

- Project budget: Overall project budget will be determined based on the component pricing presented and the feasibility of moving forward.

- Demonstrations: While the RFI process does not require a demonstration, respondents may be asked to demonstrate one of their proposed solutions if there are questions from reviewing the response.

- Questions and Answers: All submissions, questions and answers related to this RFI will be subject to Missouri's Sunshine Law and will be shared upon request; questions and answers relevant to all respondents will be made publicly available on the MO-HITECH website.

Dates

Responses must be submitted to MO-HITECH on or before 8:00 AM CDT on Friday, April 16th.

RFI Event	Target RFI Date(s)
MO-HITECH releases RFI	March 26th
MO-HITECH provides webinar on RFI to potential respondents	March 31st, 11:00 am – 12:30 pm CDT Event address: https://manattevents.webex.com/manattevents/onstage/g.php?t=a&d=935014609 Event password: Missouri Event number: 935 014 609 Teleconference: 866-699-3239 / Access Code: 935 014 609
Intent to respond due via email *Please email* George.L.Oestreich@dss.mo.gov	April 2nd
Responses due *Please send responses to* George.L.Oestreich@dss.mo.gov	April 16th by 8:00 am CDT

Respondents are welcome to submit questions to George.L.Oestreich@dss.mo.gov throughout the RFI process up until 5:00 pm CDT on Wednesday, April 14th. Questions that are relevant or may be helpful to other respondents will be posted anonymously to the MO-HITECH website.

Instructions

Please complete the section labeled as RFI Application. Follow any instructions for each section and provide clear and detailed responses to the questions. Responses which are incomplete run the risk of not being considered. If you are collaborating with other organizations to complete the application, please be clear which organization is providing various components of the overall proposal. The reviewers value concise and clear solutions that confirm the respondents' understanding of the problem.

Please note the following:

- The total response should not exceed a total of 30 pages; the response should be formatted using Arial font, size 10, with no less than one inch margins.

- Questions should be sent to George.L.Oestreich@dss.mo.gov up until 5:00 pm CDT on Wednesday, April 14th.

Terms and conditions

- MO-HITECH is subject to strict accountability, reporting requirements, and State law as a recipient of funds from public sources. Any response or other information submitted by a respondent is subject to disclosure as required by law, including but not limited to, the America Recovery and Reinvestment Act of 2009 (Public Law 111-5).

- MO-HITECH is not responsible for any costs incurred in preparing or delivering this response or any other activities related to this RFI.

MO-HITECH reserves the right to:

- Copy the response to facilitate review or use the information;

- Use ideas or adaptations of ideas presented in the response;

- Reject any and all responses, or cancel the RFI;

- Correct any defect or irregularities in this RFI;

- Request modifications to any response to this RFI;

- Modify any specifications, scope or requirements in this RFI; and

- Extend or change deadlines.

Reference Documents

The following reference documents are included to provide context for respondents to this RFI.

- MO-HITECH Strategic Plan - http://www.dss.mo.gov/hie/action/
- MO-HITECH Workgroup Materials (see Technical Infrastructure and Business & Technical Operations) - http://www.dss.mo.gov/hie/leadership
    - Technical Infrastructure Workgroup - See February 23rd Materials http://dss.mo.gov/hie/leadership/tech/meetings.shtml

RFI Application

Cover Letter

1. Please provide a cover letter on the prime organization's letterhead. This cover letter should be signed by a representative of the respondent(s).

Executive Summary

2. Please provide an overall summary of your proposed solution. Include a description of all contracting relationships, technical approach, cost model, and timeline.

Organization Information (Please limit this portion of your 30 page response to ten pages or less)

If your response requires the collaboration with or inclusion of additional partner(s), that should be stated. If you have current formal relationships with contemplated partner(s) that too should be stated. The intent is to have a single inclusive and complete solution proposed from a single responsible lead entity.

3. Please provide the contact information of the person who is responsible for any questions related to the RFI response.

4. Briefly describe each organization and its history in offering and developing the proposed HIE services, products or solutions.

5. Provide relevant strategic, technical, financial, and operational roadmaps and plans as related to the proposed solution for each organization included in the proposed solution; please provide such information for the a) the next 0 – 6 months; b) the next 6 – 12 months; c) beyond 12 months.

6. Describe any and all healthcare standards bodies or statewide implementation efforts that your organizations have contributed towards. Examples include: HITSP, NHIN CONNECT, CCHIT.

7. Please provide a list of all 3rd party contracted relationships and a description of the relationship as related to the proposed solution.

Proposed Solution

8. Please provide a summary of your proposed solution including the names of products and version/ release you are proposing to use. Provide an overall technical architecture description and diagram that shows all proposed components and how they related to each other. Include a high level technical and functional view of the solution and how it meets the required clinical functions and associated supporting core services.

9. Please provide a breakdown of your proposed solution by core and functional services as listed in the goals and objectives section. Describe what functions your solution provides as well as how it technically enables that function. Reviewers should be able to clearly understand the technical aspects for each component and how it is constructed. For the overall solution and each service, cover the following aspects:

    - Technical architectural pattern and approach
    - Product Name and Version for which the function is or will be available
    - Number of years / months for which the function has been in production and supported
    - CCHIT certification if applicable
    - Healthcare standards supported for the functional component (please list all applicable, and if there are many, how they relate to each other). Also, be specific. For example, if you support CCDs and HITSP C32, list out which components and modules and provide examples
    - Healthcare vocabularies supported – address how your system supports translation to specified standards to achieve semantic interoperability
    - NHIN capabilities (please distinguish between NHIN gateway, NHIN Direct, and/or other NHIN capabilities)
    - Sequence diagram(s) if appropriate for the function or across functions
    - Relationships to other services or functions
    - How the component can be configured, extended or modified
    - Screenshots and examples of the described functionality

10. Please provide a breakdown and description of how your proposed solution supports non-functional requirements. These include:
    - Software bug tracking
    - Availability
    - Testing
    - Performance
    - Failover
    - Disaster Recovery
    - Service Level Monitoring
    - Pattern for scaling – vertical vs. horizontal, etc.

Implementation Approach, Timing and Staffing

11. Please provide a high level but comprehensive plan containing the tasks, timing, effort, resources and dependencies for you to design, develop and deploy the proposed solution.

12. Please provide your project management method, approach and tools. Include samples.

13. Please describe your change control and risk management processes and tools. Include samples.

14. Describe staffing required to design, develop, deploy and operate the proposed solutions

15. Please estimate the number of providers that the solution can realistically be deployed to over a four year project period.

Pricing Information

Please keep in mind the model articulated in our Goals and Objectives. There are two styles of connection in mind: connections between hubs based on the NHIN messaging platform and/or similar widely adopted protocols and serving as a hub enabling connections by providers. Hybrid models that support both federated and centralized data structures may also be proposed.

16. Provide a pricing model that enables the reviewers to develop a cost model for prototyping your proposed solution with a limited but cross-sectional representation of key stakeholders. Please be as specific as possible. This should include fixed and variable costs for the following:

    - All technical services (functional, core and non-functional)
    - Implementation

Please use the sample metrics below in developing a prototype costing model. The prototype parameters should be used in developing the model requested. Please keep in mind that we are interested in understanding pricing models as much as total costs.

Please advise how the model changes if we were to try and scale this to additional HIOs and the rest of the state. Please refer to the strategic plan for an understanding of the MO-HITECH landscape and existing organizations. For example, describe if your prototype cost factors scale linearly according to a particular variable such as hardware (processors), users, nodes, transactions, population or providers or any combination of such HIE variables.

Prototype Information

- Assume that only the Critical Access Hospital and Small Physician groups (the last two in the list below) will require integration from scratch, with you acting as the HIE platform. For the other entities assume they will provide NHIN messaging capabilities and C32 CCD exchange, and that they can support either NCPDP/X12 or wrappers of those elements for Eligibility, Medication History and e-Prescribing and similarly HL7 2.5.1 messaging or wrappers for Lab receipt.

- Institutional connections (nodes):
    i. The Missouri State ESB supplying medication history and lab results,
    ii. One hospital system using its own HIO for CCDs, e-prescribing, lab orders/results via NHIN gateway or similarly specified protocols

iii. One regional HIO/Community HIO providing clinical information exchange via NHIN Messaging specifications
iv. One physician group participating in an HIO to exchange CCDs, e-prescribing, and lab orders/ results via HL7 2.5.1 bidirectional interfaces.

- Direct Connections (HIE Platform):
  i. One Critical Access Hospital using the Statewide HIO for CCDs, e-prescribing, lab orders / results and administrative transactions via HL7 2.5.1 interfaces
  ii. Three small practices using the respondent's proposed solution's services directly and integrating 2 integrated PM/EHR systems via HL7 2.5.1 messages (6 providers)